



Introduction

The Multicolored Asian Ladybeetle (MAL), *Harmonia axyridis* Pallas (Coleoptera: Coccinellidae) was introduced in Belgium to fight aphids in the biological control context. Since 2001, MAL had spread all over Belgium (and Europe) and this exotic species had become an invasive and a pest for the native aphidophagous species. This study aims to assess the importance of *H. axyridis* and other aphid predators such as Ladybird 7-spotted (*Coccinella septempunctata* L.), overfly (*Episyrphus balteatus* De Geer) and lacewing (*Chrysoperla* sp.) in four Belgian agro-ecosystems. To realise the objectives, an entomological inventory has been done in 2009 in 10 sites in Belgium.

Materials and Method

- Study sites:
10 agro-sites in Wallonia (South of Belgium)
- 2 methods sampling for the inventory
 - Sticky trap (BugScan)
 - Visual observation with quadrats (1m²)



- Observation period: March-September 2009
- A cartography of each site was realised with all the cultures and with transects of 2 km. On any transects, several quadrats were disposed to realise the visual observations.
- One sticky trap was placed on the middle of each culture.



Figure 1: site localisation (A), culture localisation (B), transects determination (C).

Results

Aphidophagous diversity

Ladybeetle:

Harmonia axyridis (D)
Propylea 14-punctata
Coccinella 7-punctata (C)
Psyllobora 22-punctata
Adalia bipunctata
Chilocorus renipustulatus
Hippodamia variegata
Coccinella 5-punctata
Hippodamia 11-notata
Calvia 14-guttata
Exochomus 4-pustulatus
Halysia 16-guttata
Aphidecta oblitterata

Hoverfly:

Episyrphus balteatus (A)
Melanostoma mellinum
Parasyrphus macularis
Scaeva pyrastris
Metasyrphus latifasciatus
Sphaerophoria rueppelli
Sphaerophoria menthastri

Lacewing:

Chrysoperla sp. (B)

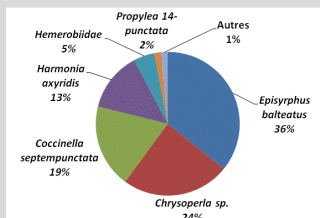


Figure 2: Proportion of imago aphidophagous species in all agro-ecosystems

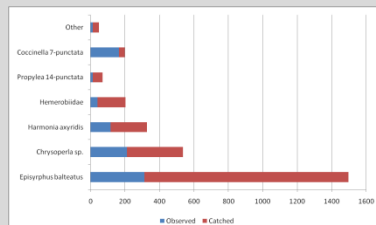


Figure 3: Occurrence of caught/observed aphidophagous species in all agro-ecosystems

Aphidophagous repartition

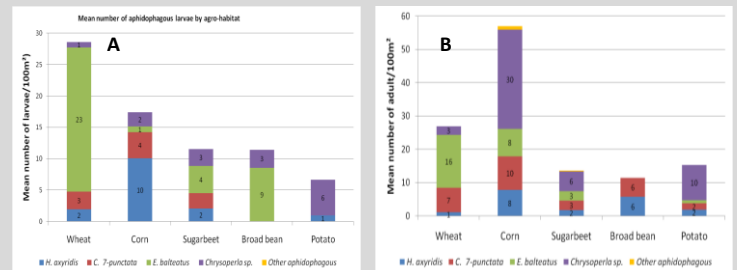


Figure 5: Occurrence in wheat, corn, sugarbeet, broad bean and potato of 4 aphidophagous. Larvae (A), Imago (B)

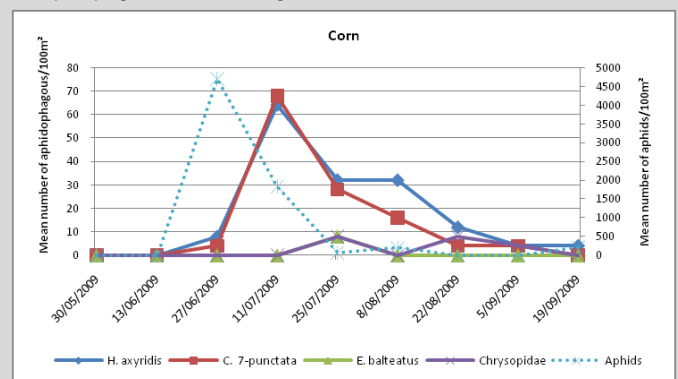


Figure 6: Temporal evolution of 4 most abundant aphidophagous species (*H. axyridis*, *E. balteatus*, *C. 7-punctata*, *Chrysoperla* sp.) and aphids in corn.

Conclusion

The entomological inventory realised in 2009 show the dominance of 4 aphidophagous species in agro-ecosystem in Belgium, hoverfly (*Episyrphus balteatus*), lacewing (*Chrysoperla* sp.), Ladybird 7-spotted (*Coccinella septempunctata*), and Multicolored Ladybird (*Harmonia axyridis*). The oviposition sites are different for each species: *E. balteatus*: broad bean and wheat, *H. axyridis*: corn, *Chrysoperla* sp.: potato. The imago of the most abundant aphidophagous was equally distributed in any culture. The occurrence of the species in agro-habitats is function of the amount of prey such as aphids. For example, in corn, the rising of density corresponding at the oviposition period of the two coccinellids is in mid-July after a rising density of aphids (*Metopolophium dirhodum*).